Stale Session Handling and Clearing

Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product or Functional Area	cnSGW-C
Applicable Platform	SMI
Feature Default Setting	Disabled - Configuration required to enable
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First introduced	2021.02.3

Feature Description

The cnSGW-C supports identifying and clearing stale sessions using a *session-stale-timer* parameter in the SGW Profile configuration. An example of a stale session is one that is inactive and not read or modified for a specific period of time.

How it Works

This section describes how this feature works.

Call Flows

This section describes the key call flows for this feature.

Timer Expiry Handling Call Flow

This section describes the Timer Expiry Handling call flow.

Figure 1: Timer Expiry Handling Call Flow

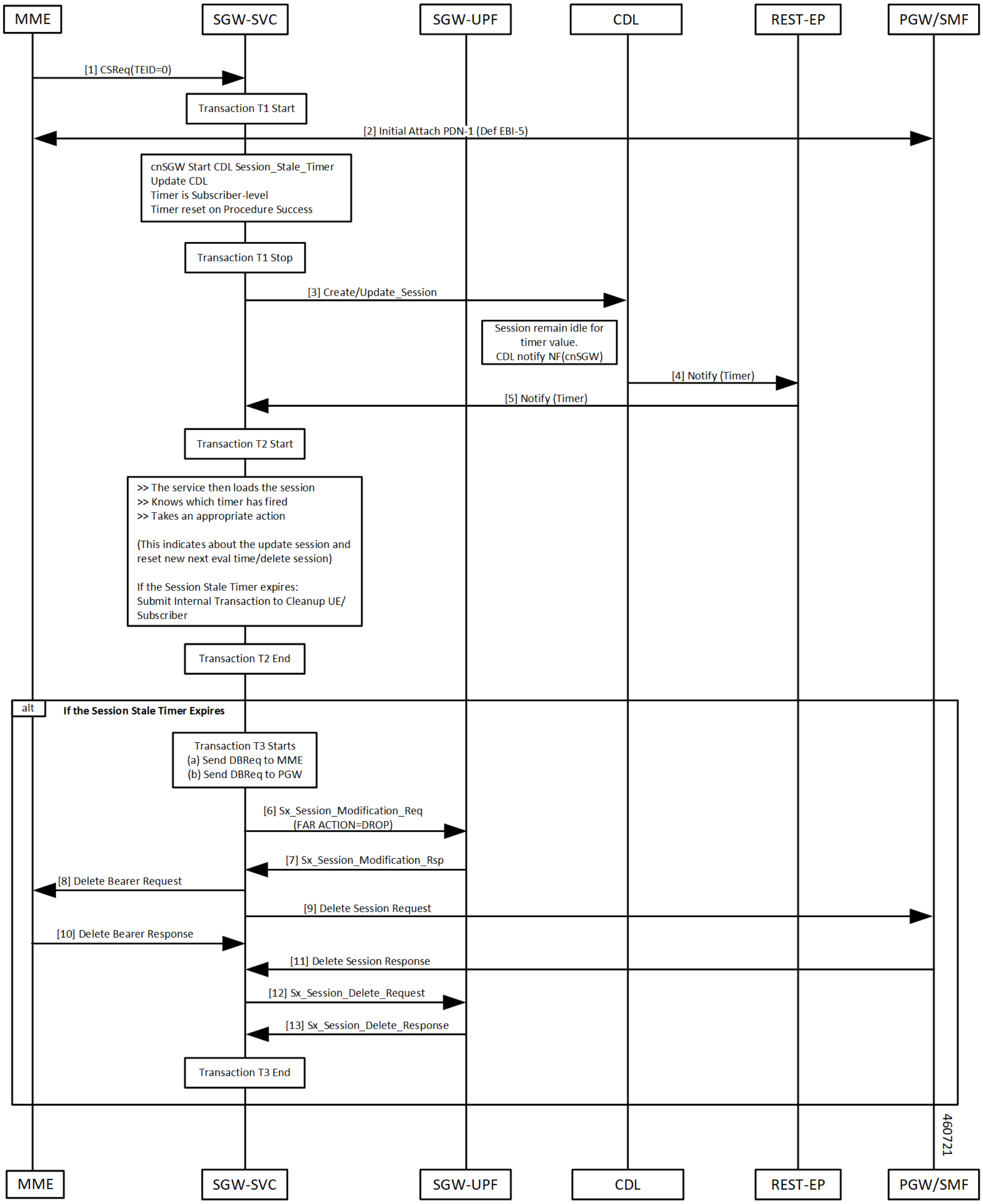
MME
SGW-SVC
SGW-UPF
CDL
REST-EP
PGW/SMF
[1] CSReq(TEID=0)
Transaction T1 Start
[2] Initial Attach PDN-1 (Def EBI-5)
cnSGW Start CDL Session_Stale_Timer
Update CDL
Timer is Subscriber-level
Timer reset on Procedure Success
Transaction T1 Stop
[3] Create/Update_Session
Session remain idle for timer value.
CDL notify NF(cnSGW)
[4] Notify (Timer)
[5] Notify (Timer)
Transaction T2 Start
>> The service then loads the session
>> Knows which timer has fired
>> Takes an appropriate action
(This indicates about the update session and reset new next eval time/delete session)
If the Session Stale Timer expires:
Submit Internal Transaction to Cleanup UE/ Subscriber
Transaction T2 End
alt
If the Session Stale Timer Expires
Transaction T3 Starts
(a) Send DBReq to MME
(b) Send DBReq to PGW
[6] Sx_Session_Modification_Req
(FAR ACTION=DROP)
[7] Sx_Session_Modification_Rsp
[8] Delete Bearer Request
[9] Delete Session Request
[10] Delete Bearer Response
[11] Delete Session Response
[12] Sx_Session_Delete_Request
[13] Sx_Session_Delete_Response
Transaction T3 End
460721
MME
SGW-SVC
SGW-UPF
CDL
REST-EP
PGW/SMF

Table 3: Timer Expiry Handling Call Flow Description

Step	Description
1, 2, 3	The initial attach and Session Stale Timer updates are sent to CDL and the timer starts. The sequence is as follows: • Initial Attach Success • Session Stale Timer created • CDL updates done. • CDL starts Time (eval time) and waits for update session. **Note** Session Stale Timer is Reset or Restart, when any of the activity or transaction happens on the Control Plane (cnSGW-C).
4, 5	The Timer expires on CDL pod, and the timer sends notification to cnSGW-C. The sequence is as follows: • If no Session update received for eval timer duration • Timer Expiry on CDL pod • CDL sends Timer Notification to cnSGW-C
6–13	The session cleanup is activated, when the Session Stale Timer expires, and the timer reset isn't required. The sequence is as follows: • Receives Timer Notification on cnSGW-C • If the Timer Notification is for Session Stale Timer and if the timer reset isn't required, it starts UE session clean-up activities. • Sends Sx_Session_Modification_Req to UPF to set FAR Action=Drop, Sx_Session_Modification response received • Sends Delete Bearer Request towards MME • Sends Delete Session Request toward PGW • Sends Sx_Session_Delete_Request toward UPF to clean up User Plane data

Feature Configuration

To configure this feature, use the following configuration:

```
config
  profile sgw sgw_profile_name
  session-stale-timer session_stale_timer
  end
```

NOTES:

- **`session-stale-timer`** *`session_stale_timer`* —Specify the maximum number of seconds for which a session can remain idle without any signaling or event, after which the session will be terminated.

  The *`session_stale_timer`* value must be in the range of 0–4294967295, and must be greater than the **`setup-timeout`** and **`session-idle-timeout`** timer values.

  To disable the session-stale-timer configuration, set it to 0.

Configuration Example

The following is an example configuration.

```
config
   profile sgw sgw1
   session-stale-timer 120
   end
```

Configuration Verification

To verify the configuration:

```
show running-config profile sgw sgw1
session-stale-timer 120
```

The output of the show command includes the following field:

session-stale-timer—Indicates the maximum number of seconds for which a session can remain idle without any signaling or event, after which the session is terminated.

OAM Support

This section describes operations, administration, and maintenance information for this feature.

Bulk Statistics

The following statistics are supported for this feature

```
sgw_service_stats{app_name="smf",cluster="Local",data_center="DC",
fail_reason="",gr_instance_id="1",instance_id="0",interface="interface_sgw_egress",reject_cause="",
service_name="sgw-service",sgw_procedure_type="stale_session_initiated_deletion",status="attempted",
sub_fail_reason=""} 1
```

```
sgw_service_stats{app_name="smf",cluster="Local",data_center="DC",fail_reason="",
gr_instance_id="1",instance_id="0",interface="interface_sgw_egress",reject_cause="",
service_name="sgw-service",sgw_procedure_type="stale_session_initiated_deletion",status="success",
sub_fail_reason=""} 1
```

```
sgw_service_stats{app_name="smf",cluster="Local",data_center="DC",fail_reason="",
gr_instance_id="1",instance_id="0",interface="interface_sgw_ingress",reject_cause="",
service_name="sgw-service",sgw_procedure_type="stale_session_initiated_deletion",status="attempted",
sub_fail_reason=""} 1
```

```
sgw_service_stats{app_name="smf",cluster="Local",data_center="DC",fail_reason="",
gr_instance_id="1",instance_id="0",interface="interface_sgw_ingress",reject_cause="",
service_name="sgw-service",sgw_procedure_type="stale_session_initiated_deletion",status="success",
sub_fail_reason=""} 1
```

```
sgw_ue_disconnect_stats{app_name="smf",cluster="Local",data_center="DC",
gr_instance_id="1",instance_id="0",reason="stale_session_init_disconnect",
service_name="sgw-service"} 1
```

```
sgw_pdn_disconnect_stats{app_name="smf",cluster="Local",data_center="DC",
gr_instance_id="1",instance_id="0",pdn_type="ipv4",rat_type="EUTRAN",
reason="stale_session_init_disconnect",service_name="sgw-service"} 1
```